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TEMPORAL LOBE SIGNS: POSITIVE CORRELATIONS WITH IMAGININGS AND HYPNOSIS INDUCTION PROFILES

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Summary.—Converging evidence suggests there should be a relationship between reports of subjective psi experiences, suggestibility, the capacity for imagining, and temporal lobe signs. An entire class ($n = 27$) of university students was given the Personal Philosophy Inventory (which contains an indicator of temporal lobe signs) and the Wilson-Barber Inventory of Childhood Memories and Imaginings. The subjects were also evaluated individually on the hypnosis induction procedure (HIP) from Spiegel. There were positive intercorrelations (0.40 to 0.60) between responses on the imaginings, temporal lobe, and suggestibility measures. Clusters of control items for mundane psychological and proprioceptive experiences were not related to imagining, temporal lobe signs or suggestibility. Although temporal lobe signs were correlated with responses to items about paranormal experiences from both the Wilson-Barber and PPI inventories (and were highly correlated with each other), they were not associated with suggestibility. We concluded that, although subjective psi experience may not be influenced by suggestibility, it was associated with the propensity for temporal lobe signs which is frequently associated with the report of psi experiences.

People who more frequently report mystical (paranormal) or religious experiences are also more likely to display temporal lobe signs (Persinger, 1984; Persinger & Valliant, 1985). These symptoms are similar to but less intense or dominating than those reported during surgical stimulation or as paraictal phases of complex partial epilepsy (Persinger, 1984). We have found that there are both internal and construct validities for a temporal lobe cluster in normal populations as determined by electroencephalographic measures (Makarec & Persinger, 1985). In the present study, we explored the temporal lobe phenomena further by asking two specific questions. First, is the frequency of temporal lobe signs correlated with the propensity for imaginings. Second, are people who report more temporal lobe signs also more suggestible?

To answer these questions, 27 (10 male and 17 female) second-year university students from a single class served as subjects; their ages ranged from 18 to 40 yr. ($M = 23.4$ yr.). Over a 3-wk. period, during the afternoons, subjects were evaluated for suggestibility according to the Hypnosis Induction Profile (HIP) of Spiegel and Spiegel (1978). Each subject was tested singly

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in a quiet room by the second author who was practiced (6 wk.; 40 inductions) before the study began. The test-retest reliability of her scores were similar to Spiegel's. Midway within the 3-wk. period, the subjects were administered (in the class setting), the Personal Philosophy Inventory (PPI) for temporal lobe signs and the Wilson-Barber Inventory of Childhood Memories and Imaginings (ICMI). They were given on different class days separated by one week. The scores were coded and not calculated until all subjects had been given the hypnosis induction. All data were loaded and compiled by another researcher who was not familiar with the conditions of the experiment.

Spiegel's total induction score is based on five items that include arm levitation, dissociation, and floating evaluations. Scores for each sign are added to give a numerical value that can range from 0 to 10; the mean and standard deviation for the scores in this study were 5.2 $\pm$ 3.2 and ranged from 0 to 10 (Spiegel's mean for this age group is about 6.8). The temporal lobe cluster was composed of 29 items that reflect experiences analogous to complex partial epileptic symptoms (Persinger, 1984); the mean number percentage of yes responses for previous populations have been 29 to 33; the present group value was 29.3 $\pm$ 12.3%. In addition, two control clusters (10 items each) that reflect normal mundane psychological and proprioceptive experiences were determined; the values were within the normal range (75% to 80%). A final cluster refers to paranormal experiences; group values range between 30% to 44%; in the present sample, the mean was 31 $\pm$ 21%.

The Wilson and Barber Childhood Memories has 52 items that refer to the propensity for childhood and adult imaginings. We determined five clusters[2] from this scale (means and standard deviations for yes responses in parentheses): childhood imaginings (39 $\pm$ 19%), extreme childhood experiences (25 $\pm$ 23%), paranormal experiences (15 $\pm$ 17%), adult imaginings (27 $\pm$ 22%), and an extreme adult experience (39 $\pm$ 24%). Spearman correlations were completed by SPSSX software on a DEC2020 computer between the induction, paranormal, temporal lobe, control, and imagining clusters. Significance level was set at $p < .01$). In addition, as verification, factor analyses were completed.

The first step was to determine the internal and cross consistency of the two inventories. Percentages of affirmative responses to statements relevant to adult imaginings were correlated (0.80) with responses for childhood imaginings. The two clusters of items referring to paranormal experiences from the Wilson-Barber and Personal Philosophy Inventory were correlated 0.76; the items from the two clusters were similar in theme but very different in description and composition. The temporal lobe cluster correlated 0.52 with

[2]Childhood Imag Q5, 6, 11, 13, 15, 16, 18, 20, 21; Childhood Extreme Imag Q17, 22, 25, 26, 29, 32; Adult Imag Q7, 9, 12, 14, 19, 23, 28, 30, 31; Adult Extreme Imag Q44 through 52; Paranormal Q35, 36, 37, 39, 40.

the paranormal cluster from the Personal Philosophy Inventory (similar to previous populations) and 0.73 with the Wilson-Barber cluster. In addition, the temporal lobe cluster was correlated with the following Wilson-Barber clusters: adult imaginings (0.42), childhood imaginings (0.50), extreme childhood experiences (0.48), and extreme adult experiences (0.42). These clusters were not significantly correlated with either of the two control clusters (normal psychological and proprioceptive statements) from the Personal Philosophy Inventory.

The correlation between scores (35 ± 14%) on the total Wilson-Barber scale (Spearman-Brown split-half $p = 0.72$); α coefficients = 0.80, 0.75) and the temporal lobe cluster was 0.64. The ten items from the temporal lobe cluster that were correlated strongest (0.54) with the numbers of alpha seconds per minute from the temporal lobes of 61 subjects from another study[3] were correlated 0.62 with the total Wilson-Barber score. On the other hand, the six items from the temporal lobe cluster that were most strongly correlated with the numbers of temporal lobe spikes per minute (0.40) were not correlated (0.03) with the Wilson-Barber scores. The average correlation (all positive) between individual items ($n = 29$) and the total temporal lobe score was 0.38 and the KR-20 was 0.65.

Hypnotic induction scores for the subjects were positively correlated with the responses on the temporal lobe cluster (0.49) but not with the mundane psychological (0.02) or proprioceptive (0.22) clusters; only the adult imaginings cluster (0.45) from the Wilson-Barber scale was correlated with the induction scores. The strongest component of the induction procedures that was associated with the temporal lobe cluster was "float" (0.63); this sign is a postexperiential self-report of the amount of buoyancy the subject remembers from the "trance". It was not significantly correlated with normal psychological (—0.07) or proprioceptive (0.06) responses. Of special interest was the lack of significant correlation between induction scores and responses on the PPI (—0.13) or Barber-Wilson (—0.20) paranormal clusters. There were no significant differences between sexes for the induction scores.

Factor analyses (principal components; varimax rotation) of the paranormal and two control clusters with the three subscales of the temporal lobe cluster (Persinger, 1984), showed results that were very similar to previous populations. Only two factors emerged; Factor 1 (eigen = 2.52, 36%) was loaded by the paranormal cluster and the three temporal lobe scales (all Pearson rs between 0.70 and 0.80). The second factor (eigen = 1.46, 21%) was loaded exclusively by the control clusters (rs 0.70 to 0.80). When all of the Wilson-Barber, temporal lobe, PPI paranormal, and Spiegel induction scores

[3]K. Makarec & M. A. Persinger, Electroencephalographic validity of a scale for temporal lobe signs in the normal population. (Unpublished manuscript)

were analyzed, four factors emerged. The first (eigen = 3.92, 40%) was loaded by temporal lobe (0.64), adult imaginings (0.64), and the two (Barber-Wilson and PPI) paranormal clusters (0.89 each); the second factor (1.8, 18%) was loaded by all of the four Barber clusters except the paranormal items. The third factor (1.31, 13%) was loaded by induction (0.78) and temporal lobe (0.62) scores; the smallest factor (eigen = 1.04, 10%) was loaded only by the two PPI control clusters, mundane psychological (0.86) and proprioceptive (0.72) experiences.

The data are internally consistent. Subjects who reported more frequent episodes of childhood and adult imaginings were more suggestible as measured by Spiegel's induction procedure. People who were prone to imaginings as children maintained this propensity as adults, although the mean dropped. Experiences typical of electrical microseizures activity in the temporal lobe and the numbers of paranormal experiences were loaded on the same factor as the capacity for adult imagining. Finally, people who were more suggestible and easily engaged in floating responses were more likely to report temporal lobe signs. These items contain a broad spectrum of statements that reflect various forms of psychological dissociation. The significant correlations were not an artifact of simply "yes responses" to items because affirmative responses on the control clusters were not correlated with suggestibility. We conclude that these data confirm the complex (but potentially discriminable) relationship between hypnosis, imaginings, temporal lobe behaviors, and the propensity to report subjective paranormal/mystical experiences.

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